

(19) World Intellectual Property Organization
International Bureau



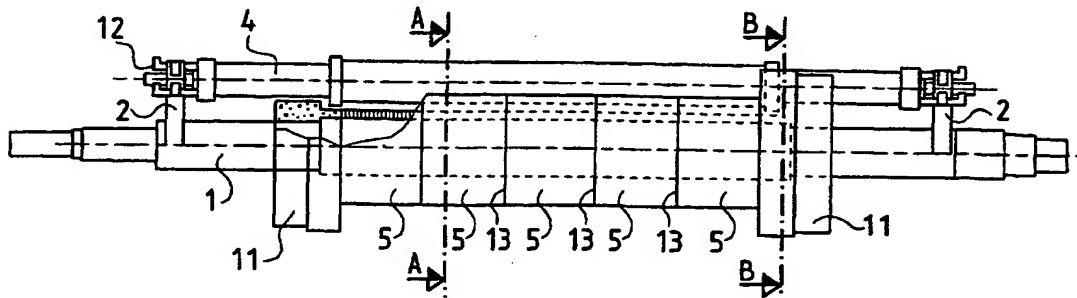
(43) International Publication Date
15 February 2001 (15.02.2001)

PCT

(10) International Publication Number
WO 01/11092 A1

- (51) International Patent Classification⁷: C21D 9/56 (74) Agent: OUTOKUMPU OYJ; Intellectual Property Management, P.O. Box 27, FIN-02201 Espoo (FI).
- (21) International Application Number: PCT/FI00/00665
- (22) International Filing Date: 3 August 2000 (03.08.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
19991668 4 August 1999 (04.08.1999) FI
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- (81) Designated States (*national*): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).
- Published:
— With international search report.
— Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: APPARATUS FOR SUPPORTING MATERIAL TO BE TREATED IN CONTINUOUSLY OPERATED THERMAL TREATMENT FURNACES



(57) Abstract: The invention relates to an apparatus for supporting material to be treated in continuously operated thermal treatment furnaces, where the supporting of the material is realized by means of support elements installed externally to the thermal treatment furnace, in the vicinity of the orifice of the furnace, said apparatus comprising at least two support elements that are installed movably, so that the mutual positions of the support elements can be adjusted by means of a drive arrangement of the support apparatus. According to the invention, in connection with the housing element (1) used for supporting of the support elements (4), there is installed at least one gas flow control element (5), which enables the flowing of the gas used for treating the material (3) between the support element (4) and the control element (5), said control element (5) also constituting part of the sealing of the thermal treatment furnace (6).

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 00/00665

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: C21D 9/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: C21D, F27B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	WO 0040766 A1 (THERMTEC B.V.), 13 July 2000 (13.07.00), --	1-9
A	US 4538986 A (SEPPO I. BLOMQUIST ET AL), 3 Sept 1985 (03.09.85) --	1-9
A	US 4049372 A (WILLIAM M. BLOOM), 20 Sept 1977 (20.09.77) --	1-9

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

4 December 2000

Date of mailing of the international search report

05-12-2000

Name and mailing address of the ISA/

Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 00/00665

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>JP 62256922 A (KAWASAKI STEEL CORP et al) 1987-11-09 (abstract) World Patents Index (online) London, U.K.: Derwent Publications, Ltd. (retrieved on 2000-12-04). Retrieved from: EPO WPI Database DW 198750, Accession No. 1987-352709; & JP 62256922 A (MITSUBISHI HEAVY IND LTD et al) 1988-04-27 (abstract) (online) (retrieved on 2000-12-04). Retrieved from: EPO PAJ Database.</p> <p style="text-align: center;">-- -----</p>	1-9

INTERNATIONAL SEARCH REPORT
Information on patent family members

02/11/00

International application No.
PCT/FI 00/00665

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
WO	0040766	A1	13/07/00	AU	3082300	A	24/07/00
				NL	1010971	C	00/00/00

US	4538986	A	03/09/85	AT	24684	A	15/02/89
				AT	388941	B	25/09/89
				BE	898688	A	16/05/84
				BR	8400314	A	28/08/84
				CA	1216420	A	13/01/87
				DE	3401792	A,C,R	02/08/84
				FI	67726	B,C	31/01/85
				FI	830284	A	28/07/84
				FR	2540138	A,B	03/08/84
				GB	2135033	A,B	22/08/84
				GB	8401941	D	00/00/00
				IT	1195999	B	03/11/88
				IT	8419232	D	00/00/00
				JP	1609021	C	28/06/91
				JP	2033767	B	30/07/90
				JP	59140326	A	11/08/84
				KR	8904946	B	02/12/89
				SE	461337	B,C	05/02/90
				SE	8400103	A	28/07/84
				ZA	8400222	A	26/09/84

US	4049372	A	20/09/77	NONE			

23.02.2001

Received

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From the INTERNATIONAL BUREAU

To:

OUTOKUMPU OYJ
Intellectual Property Management
P.O. Box 27
FIN-02201 Espoo
FINLAND

**NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES**

(PCT Rule 47.1(c), first sentence)

Date of mailing (day/month/year) 15 February 2001 (15.02.01)		
Applicant's or agent's file reference 991668WO		IMPORTANT NOTICE
International application No. RCT/FI00/00665	International filing date (day/month/year) 03 August 2000 (03.08.00)	
Priority date (day/month/year) 04 August 1999 (04.08.99)		
Applicant OUTOKUMPU OYJ et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

AU, KP, KR, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE, AL, AM, AT, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EA, EE, EP, ES, FI, GB, GD, GE, GH, GM, GR, GU, HK, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 15 February 2001 (15.02.01) under No. WO 01/11092.

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54(2))

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. (41-22) 740.14.35</p>	<p>Authorized officer J. Zahra</p> <p>Telephone No. (41-22) 338.83.38</p>
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 991668 WO	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/FI00/00665	International filing date (<i>day/month/year</i>) 03.08.2000	Priority date (<i>day/month/year</i>) 04.08.1999
International Patent Classification (IPC) or national classification and IPC ₇ C21D 9/56		
Applicant Outokumpu Oyj et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 16.02.2001	Date of completion of this report 17.08.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Bertil Dahl/MP Telephone No. 08-782 25 00

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI00/00665

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement) under article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the drawings:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheet/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI00/00665

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-9</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-9</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-9</u>	YES
	Claims	_____	NO

2. Citations and explanations (Rule 70.7)

The documents cited in the International Search Report represent the prior art. The claimed invention stated in claims 1-9 is not considered to be anticipated by these documents. None of the documents or any relevant combination of them reveal an apparatus for supporting material to be treated in continuously operated thermal treatment furnaces as described by these claims.

According to the arguments stated above, the invention claimed in claims 1-9 is novel, considered to involve an inventive step and have industrial applicability.